

(19) World Intellectual Property  
Organization  
International Bureau



538174

(43) International Publication Date  
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number  
**WO 2004/054101 A1**

(51) International Patent Classification<sup>7</sup>: **H03H 7/30**,  
7/40, H03K 5/159

R. [US/US]; 901 North Pollard Street, Apartment 1402,  
Arlington, VA 22203 (US). **RUNKLE, Paul, R.** [US/US];  
5410 Tahoe Drive, Durham, NC 27713 (US).

(21) International Application Number:  
PCT/US2003/039129

(74) Agent: **BETHARDS, Charles, W.**; Posz & Bethards,  
PLC, 11250 Roger Bacon Drive, Suite 10, Reston, VA  
20190 (US).

(22) International Filing Date: 9 December 2003 (09.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/431,708 9 December 2002 (09.12.2002) US  
60/433,618 16 December 2002 (16.12.2002) US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,  
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,  
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,  
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (*for all designated States except US*): **MO-  
TOROLA, INC.** [US/US]; Motorola Law Department,  
1303 E. Algonquin Road, Schaumburg, IL 60196 (US).

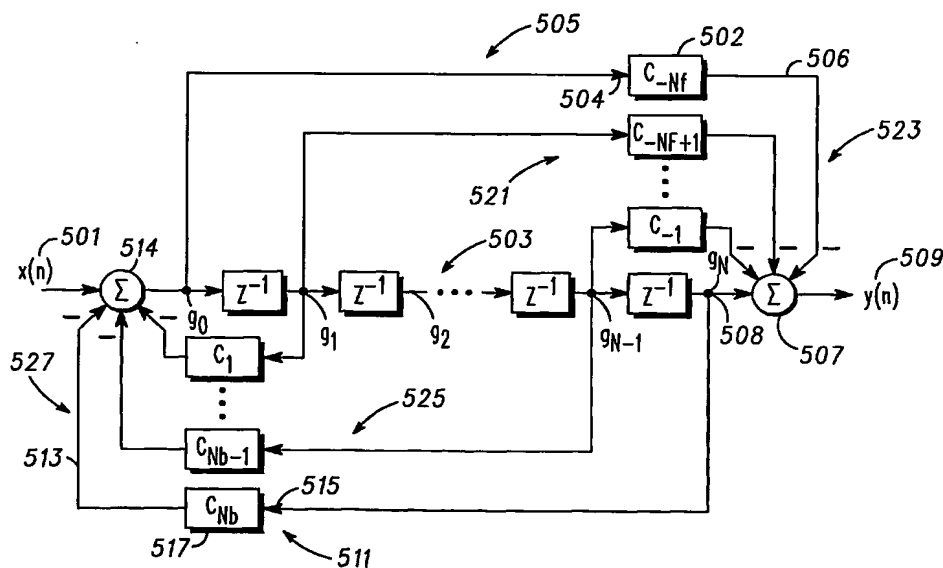
(84) Designated States (*regional*): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **MILLER, Timothy**,

[Continued on next page]

(54) Title: DECISION FEED FORWARD EQUALIZER SYSTEM AND METHOD



(57) Abstract: An equalizer and corresponding methods is arranged and constructed to mitigate adverse effects of a wireless channel (300). The equalizer includes a delay line (503) coupled to an input signal (501) and comprising a delay circuit coupled to an output combiner (507) that is operable to provide an interim signal ( $g_0 \dots g_N$ ) and a feed forward circuit (505) coupled to the delay line and operable to provide a feed forward signal (506) that comprises a hard decision scaled according to a scaling factor corresponding to an estimate of channel parameters, wherein the output combiner is operable to combine the feed forward signal and the interim signal to provide an output signal (509) that is compensated for an adverse effect of the wireless channel on the input signal.

WO 2004/054101 A1



**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*